

EDITORIAL ARTICLES.

THE EVOLUTION OF THE AMERICAN SURGEON.¹

THE Columbian year has just expired. The pomp and glitter of processions, and the rhetoric of eloquent oratory, the marshalling of historical items from the annals of the past, the resources of imagination, the fruit of the printer's type, the painter's brush, the sculptor's chisel and the architect's pencil have all been combined in celebrating the faith and courage and persistence of the Discoverer, and the wonderful material progress of the Discovered. For the time being we have been making of chief interest in our thought the times in which the Discoverer lived, the place that gave him birth, the conditions that molded him in his development, the influences that drove him on in his purpose, and sustained him during the many days of his daring advance across the unknown waters toward the land of his dreams. It is but natural, therefore, that an assembly of medical men, sharing in the general epidemic influence, should turn with special interest to the condition of their own profession at this particular period of the world's history, and should with interest, and mayhap with profit, trace the changes which have marked the development of the medical world during the four centuries that have since elapsed. To a more restricted field still would I invite attention during the present hour, and ask attention first to the surgeons and surgery of the Columbian era, this being more especially for the purpose of giving me a fitting background for the picture of the American surgeon of 1893, which it is my desire to present to you, in the course of an effort to discharge the duty which the accident of my position for the present hour has laid upon me.

More than a hundred years have elapsed since Saint Louis, the

¹ The Anniversary Address delivered at the Eighty-seventh Annual Meeting of the Medical Society of the State of New York, February 8, 1893, by its President, Lewis S. Pilcher.

truest and last of the Crusaders, had expired among the sands of Africa, and the last Crusade had burnt itself out. Men have ceased to care that the holy places are in the possession of the infidel. It is an age of religious apathy but of intense interest in classical learning and artistic effort. No longer are men divisible simply into three classes of masters, dependents and clerics. The crust of the feudal system which had enthralled the nations of Europe has been broken up and a new social order has emerged from its ruins: commerce has been created, art again has begun to charm men, while literature and philosophy command the devotion of multitudes. Most important result of all has been the rise of the middle class, the true safeguard of nations, the repository of faith and patriotism, the source of progress, the conservator and producer of wealth, the mother of merchants, navigators, architects, artists and scholars—a class which is ever the true index of a nation's greatness. The character and attainments of the physicians of an age or nation in a particular degree is always an exponent of the average character and attainments of this class, plus the added refinement and elevation of character which the pursuit of medical study and practice inevitably attaches to its devotee. The civilization of Greece, which produced Pericles, Socrates and Plato, added additional lustre to its record by the birth and teaching of Hippocrates. The Golden Age of Rome, when, if we can trust the judgment of Gibbon, the human race was most happy and prosperous, and when the vast extent of the Roman Empire was governed by absolute power, under the guidance of virtue and wisdom, is no more celebrated for the production of a Marcus Aurelius than for the life and work of the man whose teachings were to determine medical thought for 1400 years, Claudius Galen. The enlightened and liberal reigns of the Bagdad caliphs, when all Europe was obscured by the ignorance of the dark ages, preserved to the world learning and philosophy, and created Rhazes and Avicenna; while in the west, the civilization which culminated in the Alhambra was adorned by the work of Avenzoar and Averrhoes. Time fails to permit me to give in detail the evidences of this close relation between general

intelligence and medical progress which crowd upon the notice of the student of history. It is no less true in the present age than in the distant past. The quickening thought, the broken barriers, the elevation of the common people that followed the French Revolution made the French medical profession of fifty years ago to lead the world, resplendent as it was with the names of Larrey, Dupuytren, Laennec, Louis and Velpeau, and a host of others. The hundred years of growth among the common people of England that followed the Cromwellian period, despite the mediocrity of the princes that nominally ruled the country, created the conditions that made possible and called forth the Scotch cabinet maker's apprentice, John Hunter, the London merchant's son, John Abernethy, and the Norfolkshire clergyman's son, Astley Cooper. While the Victorian era, with its material splendor, its heaping up of wealth, its advancement in literature, science and art unparalleled, its glorification of the common people, has given us out of the bosom of this people a Simpson, a Paget and a Lister. And Germany, rising from its abasement of 1807, by its educational and civil reforms has created a new people, whose power and attainments are fitly typified, not alone by the names of Virchow, Langenbeck and Koch. In a word, the medical profession is peculiarly "of the people and for the people." Medical men come nearer to the heart of the people than do men of any other calling. What shall be the standard of their attainments and their training is a matter that is largely self-regulating, especially among an intelligent people, in accordance with the great principles of demand and supply.

Three hundred years before the Columbian period which now engages our attention, the accomplished and enlightened emperor, Frederick II, had attempted to regulate the medical profession in his kingdom of Naples and Sicily, and had made an ordinance in these words: "Since no progress can be made in medicine without a knowledge of logic, we will and ordain that no person shall be admitted to the study of this art unless he has given himself at least three years

to logic. Afterward he shall devote five consecutive years to medicine, and at the same time to surgery, which forms a part of medicine. Then only and never before this time shall he be admitted to examination and receive permission to practice." Still further, he ordained that the first year of the neophyte's practice should be done under the eyes of an old and experienced physician. Wise ruler! No better regulations could be devised by the most enlightened legislators of the close of the nineteenth century! But Frederick was 300 years ahead of his time. He was doubtless acting under the counsel of the teachers of the School of Salernum, which school was then at the height of its renown, while southern Italy was all aflame with the new life which the times of the Crusades had awakened.

With the lapse of the conditions that awakened this temporary brightening up of scholarly life in southern Italy the life itself languished, the school of Salernum fell into decay, the influence of the average attainments of the people reasserted itself. Pope Innocent III, in 1215, promulgated his bull that as the Church abhorred all cruel or sanguinary practices, not only should no priest be permitted to follow surgery, or to perform any operations in which instruments of steel or fire were employed, but also that they should refuse their benediction to all those who professed and pursued it. No wonder that 200 years later, in the beginning of the Columbian century, according to the statement of Malgaigne, the surgeons of Italy were in general timid practitioners, who scarcely dared to handle a knife; all their resources consisting in multiple recipes, of many of which they made a secret. Professors of medicine in that age were, for the most part, only commentators, taking up some author of whom they could read at first the text, then illustrating this text by their comments. Thus their lessons were true "readings," and the professors properly bore the name of "*lecteurs*"—readers.

Beginning with the end of the fourteenth century the two authors most in vogue for the complete courses of internal pathology were Avicenna, for general affections or fevers, and Rhazes' ninth book, for local maladies. And as this ninth book took up all diseases in the

order of regions from head to foot, the commentator had necessarily to pass in review the affections of the ears, the eyes, the mouth, the intestines, the genito-urinary organs, in a word, all surgical affections proceeding from internal causes. Mechanical lesions alone remained out of the category. Operations for stone in the bladder were still abhorred by respectable surgeons and relegated to itinerant specialists, who were the "orificial surgeons" of that day. The first of the Colots, Germain, had, however, already risen superior to this prejudice, and in France had established the operation of lithotomy by the "apparatus minor," as a legitimate surgical procedure, while the use of the apparatus major had not yet, perhaps, suggested itself to the young surgeon of Cremona, Joannes de Romanis, who thirty years later was to communicate the method to Marianus, through whom the Marian operation was to become introduced to the world.

The Columbian period is not distinguished by any pre-eminent name in surgery, nor by any epoch-making discovery. The changes in the social state, the fermentations in the intellectual vat of the time had not yet reached the point where their full effects were to be realized in the field of endeavor. It contains much of interest, however, to the student of the evolution of surgery in the indications which are already discernible of the brilliant achievements of the succeeding century. The Italian universities of Bologna, of Padua, of Pisa, of Ferrara are being crowded with students from all parts of Europe. During the first quarter of the century Peter of Argelata has been teaching surgery at Bologna and writing his work on surgery. No vulgar or timid salve-monger was Peter. He taught philosophy and medicine as well as surgery. As an operator he trephined the cranium, he bored the tibia for the relief of osteo-myelitis, a sequestrum within the femur did not daunt him, he drew back only from caries of the hip and of the vertebræ. He operated for hernia and for stone, he embalmed the body of a pope with his own hands, he did not hesitate to dilate the uterine cervix and to carry his hand into the cavity of the organ and with hooks and forceps to bring out therefrom a retained foetus, and when he died his admiring contem-

poraries erected to his honor a statue in the amphitheatre of the university to whose fame he had contributed so much. In 1480 his book, *De Chirurgia Libri Sex*, was first put into print at Venice; a second edition appeared in 1492, and a third and a fourth rapidly followed each other before the close of the century. Two more editions were called for in the early part of the sixteenth century. In this book the author, though he has borrowed much from Guy de Chauliac and from Avicenna, has gathered many noteworthy observations of his own. He protests against the abuse of sutures, exploits the value of compression in the treatment of old ulcers, and makes a note that a part may lose the power of muscular motion without the loss of sensation. This book of Argelata was the *vade mecum* of the better class of Italian surgeons of the close of the fifteenth century. To one copy of it attaches an interesting history. More than 200 years after the death of the author, an assistant surgeon at a Florentine hospital, while rummaging among musty archives for another purpose, came accidentally upon a copy of the *De Chirurgia Libri Sex* of Argelata. The broad margins of its folio pages he noticed were covered with copious notes. His curiosity was stimulated to decipher them, and thus was brought to light the "One Hundred Observations" of Marcellus Cumanus, which a few years later, in 1667, were published by Welsch, among his "Six Hundred Medical Observations" (*Sylloge Curationum et Observationum Medicinalium, Centurie Sex*). Marcellus Cumanus was a Venetian surgeon, of whose birth or death, or family or personality, nothing is known. We simply know that in 1495 he was serving as a surgeon in the Venetian army during the invasion of Charles VIII; that he was a man who had both the mind to observe and the talent to record what he saw even among the distractions of wars and camps. These observations, written down upon the margins of his surgical text-book, still remain to rescue his name from oblivion, and to testify to us in these days of the calibre and quality of an every-day surgeon in Venice four hundred years ago. One cannot help but wish to know more of him, of his family, his education, his social position, his business success. His

notes show that he did not venture far out of the track marked out by his master, though he was already compelled to strive with two important elements of military surgery that were unknown to Argelata, viz., gunshot wounds and syphilis.

When Argelata laid down his work, Leonard Bertapaglia took it up and continued it at Padua and at Venice until his death, in 1460, but in a manner that commands our respect far less than that of his predecessor. Operative surgery he abandoned to bathers and barbers. He shared in the astrological superstitions of the day. He evidently understood human nature, and had the faculty of recommending himself to the rich and powerful, for it is recorded that he enjoyed a great reputation at Padua and afterward at Venice, and that he amassed such a fortune that he was able to amuse himself in his later years with the erection of magnificent buildings at Padua and its environs, an amusement which some of us can testify is not altogether inexpensive even in these later times. The best thing I have been able to discover about Bertapaglia is that he himself dissected two human cadavers, and thus helped to create that public sentiment which enabled the famous anatomists of the next century, Eustachius, Realdus Columbus, Gabriel Fallopius, Hieronymus Fabricius and Vesalius to inaugurate their systematic and continued dissections of the human body. These were the times of seed sowing and preparation. When Columbus sailed from Palos, in 1492, Guinterius, the future teacher of Vesalius, was a boy of five years playing in the streets of Andernach; Paracelsus, the iconoclast of traditional medicine, was a baby in his mother's arms, and the apothecary of Cremona, whose son, Realdus Columbus, was to become the first discoverer of the pulmonary circulation, had yet two years in which to amass the money to buy that son's cradle before it should be needed. The picture which Sprengel draws of the surgery of the fifteenth century is a very depressing one. It is evident that Bertapaglia, far better than Argelata, represented the spirit of his time in the position that he took in disdaining to occupy himself with operative surgery, and in abandoning manual interference to ignorant

bathers and barbers, who could neither read nor write. Even in the latter part of the fifteenth century, the period in which we are now most interested, educated and skillful surgeons were so rare that when Matthias Corvinus, king of Hungary, wished to be recovered of a wound that he had received in battle, he was forced to send proclamations into distant countries, promising honors and riches to whosoever should succeed in curing him. At last an Alsatian surgeon, Hans of Dockenburg, undertook the task, cured the king, and returned to his home loaded with presents.

Paris and Italy were the chief centres of learning, and inevitably within the bounds of the enlightenment that extended from their universities were to be found the highest types of both medical and surgical effort. Though the revival of Greek learning and the pursuit of philosophy on classical lines had already contributed much to change the face of science, and though at the centres of this cult great advances had been made, nevertheless the most part of the physicians of the fifteenth century remained, like those of the preceding age, superstitious adorers of Arab idols, blind imitators of their predecessors and ignorant empirics (Sprengel II, 469). Up to the middle of the fifteenth century the only practitioners of the healing art in most of the cities of Germany were the bathers, who occupied so low a position in the social scale that no artisan would accept the son of one of them as an apprentice. As yet without universities, as a nation poor, the German barbers, unable to buy books, without any systematic instruction attainable, dependent upon the system of apprenticeship for education, did not extend their ambitions beyond what they had seen their masters do. In the free city of Strasburg did the first tendencies to betterment show themselves. It was from here that Hans of Dockenburg went to cure the Hungarian king, and it was here that Jerome of Brunswick was practicing and writing his *Buch der Chirurgia und Wirkung der Wundarzney*, while Columbus was plowing his way westward over the Atlantic. English surgery was yet to be created. From the time of John Ardern, who lived during the last half of the fourteenth century,

when he wrote his treatise on "Fistulæ in the Fundament," to that of Thomas Vicary, who lived in the middle of the sixteenth century, there is not a single English surgeon whose work is of importance enough to find a place in the annals of surgery. There is one British name, however, that is intimately associated with the learning that characterized the best of the Italian surgeons of the Columbian period, who doubtless came in contact with them as a fellow-student at the court of the magnificent Lorenzo de Medicis, and who in turn may have exerted some influence on them. I mean that Derbyshire gentleman, Oxford fellow, polite scholar, and elegant classicist, Thomas Linacre, who about 1484 went to Italy and spent some years at Bologna, Florence and Rome pursuing studies in classical learning, natural philosophy and medicine, and who in the courts of Italian princes perfected himself in those graces which later made him the medical arbiter to three successive English kings, and enabled him, by the institution of the Royal College of Physicians in London, to lay the permanent foundations of rational medicine in Great Britain.

The state of surgical affairs in Paris at the close of the fifteenth century is both interesting and instructive. For more than 200 years the surgeons of the College of Saint Come had been attempting to regulate the practice of surgery in that city and district through the privileges originally granted to the organization by Saint Louis at the instance of Pitard and Lanfranc. The College of Saint Come was a society of surgeons, self perpetuating, into whose membership were to be admitted only surgeons of recognized orthodoxy, both in theory and practice, while they were clothed with the power to forbid the practice of surgery to all who should fail to obtain their approval. As time passed the college had increased in importance and influence; its members wore long robes, delivered lectures, granted certain degrees, and modeled themselves after the faculty of medicine, though imperfectly. The number of its members was always small, from nine to fifteen, usually. But the prevailing prejudice of the time, that regarded all manual effort as degrading, had not been without its influence on these surgical aristocrats. The more highly they esteemed

themselves the more they disdained surgical handicraft, until they came to regard it as beneath their dignity to reduce a dislocation or dress a fracture ; minor operations were relegated to the barbers, and many major ones, as those for stone, hernia and cataract, were abandoned to specialists called "*inciseurs*," and in the restricted territory that was left they busied themselves simply with the prescription of topical applications and internal remedies. More and more ordinary surgery in Paris fell into the hands of the barbers. Profoundly self satisfied, content with the teachings of Guy de Chauliac, Lanfranc, and others of the Arabists, intent on preserving their prerogatives from the encroachments of the aggressive barbers about them, no scientific progress was made by the surgeons of the long robe during all the generations that had elapsed since their organization ; no great name graces their annals. During this very last decade of the fifteenth century all their energies were being devoted to prevent barbers from being admitted to courses in anatomy and surgery in the vulgar tongue, that the faculty of medicine were proposing to open for their instruction, an effort which was successful for a time only, since in 1499 these courses were finally organized, resulting in the formation within a few years of a new corporation known as "*barber-surgeons*," in the steady decadence of the influence of the College of Saint Come, and, in the course of the next generation, in the development, from among the *barber-surgeons*, of that prince among surgeons, the real founder of rational surgery in France, whose influence has been felt in all countries and in every generation since, Ambroise Parè.

The members of the College of Saint Come confined their work entirely to Paris, where only were to be found those social surroundings and financial rewards that were befitting their aristocratic aspirations. In the provincial cities and throughout the country the barbers and "*inciseurs*" had undisputed possession of the surgical field. That the class of work which they did must often have been fair, and that the training to which many of them were submitted was of considerable merit considering the age and time, the statutes of the city of Bordeaux for 1457 inform us, according to which we learn that a

candidate for admission to the guild of barbers in that city had to appear before four examiners, in the shop of each of whom he had to spend eight days, during which he had to demonstrate his skill as a barber, while the examiners were to assure themselves that he had good sight and a good and true hand for shaving and bleeding; that he knew how to make lancets sharp and pointed; that he knew the veins from which blood could be taken; and how to do other things belonging to the trade of barbery and surgery. Especially in the matter of surgery the examiners were to assure themselves that the candidate was learned and expert in the anatomy of the human body, in abscesses, fractures, lacerations, wounds, dislocations, chancres, fistulas, and generally in all other maladies that can befall the human body, and in all other things necessary and belonging to the office and trade of surgery; likewise, that he knew how to stitch, bind up and suture a wound, and was acquainted with the herbs and other things required for making ointments and plasters. In a word, they were to examine him upon everything else which seemed to them proper and reasonable for the good and profit of the public and for the honor of the aforesaid trade. This examination was a public one, in the presence of the mayor and other officers of the city. The candidate, once accepted, was to swear to exercise his functions well, and to obey the laws, to lead an honest life, to keep good ointments in his shop, and not to exact excessive fees, and to keep the secrets of his clients.

We turn with a sense of relief from the picture of narrow selfishness and pretentious assertion that is preserved for us in the records of the Parisian surgeons of the long robe, to make brief mention of three additional characters of a nobler type from among the Italian surgeons of this period, with the mention of whom must close this glance which we have attempted at the surgeons of the Columbian period; and first I must mention one in whom culminated the surgery of the Middle Ages, and whose writings for fifty years, far toward the close of the succeeding century, dominated surgical thought and practice in Europe, until they were swept aside by the masterful

originality of Paré, whose acquaintance with Arabians and Arabists, with Hippocrates, Galen and Celsus, with Aristotle, Cicero, Ovid and Suetonius, as evidenced in his writings, testifies to his erudition and scholarship, and who was withal a fortunate and skillful practitioner as well as an erudite scholar, Jean de Vigo, who in 1492 was a young surgeon of thirty-two years of age, at Genoa, but who later attracted the attention and secured the confidence of Pope Julius II, who called him to Rome, where he composed his *Practica in Arte Chirurgica Copiosa*, a book which had prodigious success, going through twenty-one editions in less than thirty years, a book which, despite its merits as a summary of the surgical knowledge of the day, leaned too much to the pharmaceutical rather than to operative surgery, and tended to retard true surgical progress.

The rival and opposite of Vigo was Jacopo Berengario Da Carpi, the boldest surgeon of his time because the most skillful in anatomy. He himself claimed to have dissected several hundreds of cadavers, and was commonly believed to have also dissected living men that he might study the beatings of their hearts. He was ten years younger than Vigo, having been born in 1470. He was the son of a surgeon of Carpi named Faustino, was a schoolfellow with the young Duke of Carpi, was a pupil of Aldus Manutius, and later a friend of Benvenuto Cellini, with whose fiery temper he evidently had much in common. He was both a doctor of philosophy and of medicine, and was professor of Surgery at Bologna, and later went to Rome, where he enjoyed great fame and accumulated much wealth. He was proud and bold enough to refuse the request of the Pope himself that he should enter his service, disdainfully saying that he preferred to be at the service of every one who should seek him. At his death he left behind him the great fortune of 40,000 crowns.

The last name that I shall mention is that of a Florentine physician, Antoine Benivieni, whose period of active practice extended from 1470 till his death in 1502. He was of noble family, and was an active participant in the mental activities and splendors of Florentine life during the most brilliant period of the Medicis. He enjoyed

the friendship and instruction of Poliziano and Ficino, whose counsels he shared with the young English medical student, Linacre. He cultivated belles-lettres, philosophy and Greek, as well as the technical studies of his chosen profession. In his work he embraced the entire art of healing, but devoted himself more to surgery than was usual to the physicians of his time. Before his death he had collected into a manuscript volume a large number of personal clinical observations; these were printed after his death under the title of *De Abditis Morborum Causis*. All of which show him to have been a profound observer and a skillful surgeon. He enjoys the singular honor of having been the first to habitually seek for the *hidden causes of disease* by examination of the body after death. He was not content to perform autopsies upon the bodies of his own patients only, but he sought with ardor for every opportunity for such examinations.

These three names, all contemporaries of the Columbian era, fitly round out the picture of the surgery of that era, when the door of the Middle Ages was closing, and the signs of the oncoming of the achievements of modern times were beginning to appear. Vigo represents all that was good of the past, with its prejudices and its limitations; Carpi, fearless and skillful as anatomist and operator, had in himself all the force and the potentialities of the surgery of the present day; Benivieni is a type of the clinical observer and the pathological investigator, those elements of modern scientific progress to which most of the vaunted achievements of the present day are due.

In the references to the surgeons of the Columbian period which I have made, it has not been my plan to speak in any detail of the particular procedures and methods which they adopted; it has not been so much the state of the theory and practice of surgery that has engaged my attention as it has been the character and training and social status of the practitioners themselves. It was still a rude age; the enlightenment that had dawned upon Europe was still in its early morning, and the chains of tradition and of ignorance still held the

masses; the houses even of the great harbored filth and dirt; the bottom layer of the rushes that covered the clay floors of the dwellings of the people was left undisturbed for years; the principles of hygiene were unknown; the labors of the people were hard and ill-rewarded; the disturbances of war were incessant; and yet, in their way, the men of the fifteenth century doubtless enjoyed life, and barring the effects of pestilence and the sword they lived out the measure of their years as men do now. Their physical wants were crude, their ideas of the necessity of medical treatment and surgical relief were doubtless as fully met by the practitioners of that day as are those of the people who call upon us in this day and generation. And we have seen that in that age, as in this, every grade and quality of person was to be found in the ranks of those who professed to heal disease. The disdain which was then general for anything which savored of manual labor tended to relegate the operative and technical side of surgery to an inferior place in the healing art, and correspondingly to elevate in the estimation of men those who only theorized and prescribed. Much of superstition still clung about every branch of medicine. The efficiency of a prayer said during the compounding of an ointment; the favorable conjunction of the planets for the undertaking of an operation; these were matters of importance to the best of the surgeons of this age.

Nevertheless, as we have seen, there were never wanting men of originality and power, who rose superior to prejudice and superstition and shed lustre on the surgical art. Such were men of liberal education who were versed in medicine as well as in surgery, of good social position, even sometimes of noble birth; they sat at the feet of philosophers and shared in the conversation of poets and artists; they were the friends and companions of cardinals, princes and kings; they were the favorites of popes, and often were loaded with honor and wealth.

The careers of these fifteenth century surgeons abundantly illustrate the same truth which those of the nineteenth century are proving to be no less true now than then, viz., that in the paths of surgical

effort the enduring rewards of public confidence, of honor and emolument are the most certain to be secured by those who, to natural mental gifts, chastened and enlarged by liberal and broad training, shall add enthusiasm and application, coupled with an ability to rise superior to the obstacles of prejudice, tradition and conventionalism.

My theme is "The Evolution of the American Surgeon." What has preceded may be considered as the prologue to this theme. The worthies of the fifteenth century have faded from our vision, and in their places rise Warren and Bigelow, Mott, Parker, Wood, Hamilton, Sands and Sims, Physick, McClellan, Pancoast, Gross and Agnew, Brainard, Gunn and Parkes, McDowell and Dudley and a host of others who within the last hundred years upon this new continent by their lives and their works have contributed to the development of a type of work and of workers in surgery which may properly be called a distinct school, that of American surgeons.

The absence of a hereditary superior class, the necessity of building from the foundation in the whole social as well as political fabric, the atmosphere of freedom, the prevalence of intelligence and education, the restless ambition and strife for advancement, the discontent with humble things and the possibility of betterment open to all, the mingling of races and of ideas, the sense of personal worth, the contempt of tradition and of conventionalities, the self-reliance, the adaptability to circumstances, and the ability to shape circumstances to conform to wishes, the stimulating climate, the fertile and responsive soil, the rich rewards to be secured by labor in every department of human effort, the prevailing religious tone, the regard for learning, the pride of citizenship and of sovereignty—these, among other influences, have contributed largely to the development, in the course of time, of a special type of manhood in the New World that waited for its discoverer 400 years ago. Among such a people, if there is any truth in the close relation of the character of the medical advisers of a people to that of the people themselves—which was maintained in the earlier part of this address—it is inevitable that a new type of physician should arise. Here all shades of medical thought and pre-

tence have had an equal arena. No vagary so wild, no pretension so preposterous, but that it has been here afforded a hearing, and the principle that every individual shall be free to choose his own medicine as well as his own religion, has been permitted its full sway. That governmental paternalism which says to the people: "Since you are not in the natural order of things capable of judging in these technical and recondite matters, you shall be saved the trouble of making such choice, and only those shall be permitted to minister to you whom the officers of the government have tested and determined to be qualified," however wise and desirable such paternal oversight might be, has had but little acceptance among this people. Whatever of medical advance and medical equipment has occurred among them has been of spontaneous development. A greater proportionate number of individuals have devoted themselves to the art of healing among this people than among those of any other nation; for two reasons, the social position of such practitioner has always been honorable, and a fairly adequate pecuniary reward has always waited on good judgment, industry and perseverance. Is it not a noteworthy fact, as indicative of the sterling good sense of this people as a whole, that among them, with the growth of years, a continually increasing influence has been accorded to rational medicine, and that the standard of attainments, both in general culture and technical knowledge that is required by the public opinion of its practitioners, has steadily advanced? The composite photograph of the medical man of the New World at the present day, if critically scanned, will reveal a man who to general culture and technical knowledge adds self-respect and self-reliance, together with fertility of resource and adaptability to circumstances, practicality of thought, the ability to see the special needs of the case in hand without regard to theories, and to apply the remedy needed; and beyond these, a catholicity of mind that lays all nations under tribute, and appropriates for his arsenal weapons forged in the fires of many lands.

It was to such a man as this, a typical American, who to the opportunities and influences of his Virginia boyhood and Kentucky

youth had added the stimulus and culture of the most famous of European schools and the ripening power of fourteen years of general practice among the pioneers of the West, to whom, in the month of December, eighty-three years ago, came riding from sixty miles distant, Mary Crawford, supporting her projecting abdomen upon the pommel of her saddle, begging relief from the ovarian tumor that was sapping her life. In all the history of surgery there was no precedent to warrant an attempt at interference in any such case. Possibly in the oratorical flights of his former Edinburgh preceptor the possibility of successfully interfering for the relief of such a condition may have been hinted at, but no one as yet had had the courage, the lofty enthusiasm, the wisdom, to make the attempt. But this woman did not make her appeal in vain. She was ready to endure; the surgeon did not hesitate to venture; guided by correct pathology and possessed of trained operative skill, he performed his part; the tumor was removed; the patient restored to health, "ovariotomy" was given to the world, and the name of McDowell immortalized. That day, in the modest dwelling of the Danville surgeon, was born into the world "intra-peritoneal surgery," a field of surgical effort whose vast possibilities for good are only now beginning to be realized by mankind.

In 1839 Velpeau in Paris wrote: "To avoid pain in surgical operations is a chimera which it is not allowable to pursue at the present day." In October, 1846, in London, Sir Benjamin Brodie said: "All physicians and surgeons have been looking in vain from the days of Hippocrates down to the present time for the means of allaying or preventing bodily pain." Within twenty-four hours of the utterance of these words, in the operating theatre of the Massachusetts General Hospital in the United States of America, an American dentist, before a host of skeptical witnesses, had demonstrated beyond cavil that the inhalation of ether would induce such a state of insensibility that under its influence prolonged surgical operations could be done without pain or consciousness on the part of the patient. A new fact, to name which a new word had to be coined, was demon-

strated to the world, a word which is now so common that it is difficult to believe that less than fifty years ago the word "anæsthesia" was unknown. With what national pride, as well as profound thankfulness to God, will American surgeons always hereafter read on the marble shaft in Mount Auburn Cemetery, which preserves the name of this benefactor to mankind, this inscription: "W. T. G. Morton, Inventor and Revealer of Anæsthetic Inhalation. Before Whom in all Time Surgery was Agony. By Whom Pain in Surgery was Averted and Annulled. Since Whom Science has Control of Pain."

The present century has witnessed the addition to surgical possibilities of three facts, which in the range of their importance as to both their direct and remote results are of supreme moment in surgery; these in the order of their appearance have been: The opening of the peritoneal cavity to operative interference, the discovery of surgical anæsthesia, and the demonstration of the relation of micro-organisms to disturbances of the healing of wounds. All these are the direct fruit of the practical tendency of the Anglo-Saxon mind, and two out of these are, without any demurring, universally acknowledged to be the fruit of the American spirit.

To these two pre-eminent contributions it would be possible to add a list, of an importance only secondary to them, which if given in detail would too greatly extend the limits of this address. I can but suggest a few of them in further illustration of the claim that I have made for a special character attaching to the tendencies due to the spirit and environment present in this western continent. The name of Mott was made famous by his ligation of the innominate artery in 1818, but to it could be added the names of many other American surgeons, who both before and after that date displayed anatomical knowledge and operative dexterity in ligating important blood-vessels during the period when such operations were considered as among the most important essays of surgical skill.

The demonstration of the principle that in dislocations of the hip and shoulder, the chief obstacles to reduction are tense ligamentous fibres, untorn portions of the capsule, which may readily be

relaxed by proper manipulations, a truth which has revolutionized the surgery of dislocations, is due to the perspicacity and labors of our countrymen—Smith, Reid, Gunn and Bigelow.

What surgeon at this day would be willing, in the treatment of fractures of the femur, to dispense with the simple method of extension by a weight and pulley, the weight exerting traction upon the leg through properly applied strips of adhesive plaster? a method which dates back only to 1851, and is due to the practical common sense of Buck, of New York City.

In orthopaedic surgery the devising of apparatus whereby sufferers from tuberculous inflammation of joints might secure necessary fixation and extension, and yet not be deprived of the benefits of fresh air and exercise, has brought special lustre to American surgery, a field of work in which the names of Davis, Sayre, Taylor and Shaffer are especially to be noted as leaders. Especially brilliant in this field of effort was the application by Sayre of the gypsum bandage to the treatment of vertebral caries.

In the department of genito-urinary surgery, the key to the most important advances in the surgery of the urethra and bladder was furnished by Otis, of New York, when he demonstrated that the urethra, after incision of the meatus externus, could be normally distended to a much greater extent than had hitherto been supposed practicable, and that by full distension with linear incision of contracted areas, permanent and radical cure of strictures was possible. After the recognition of the capabilities of the urethra to receive instruments of larger calibre, came naturally the proposition of Bigelow for immediate and full removal of crushed stone at a single sitting, a proposition made practicable by the invention of instruments for litholapaxy, which attest the fertility of resource of that surgeon and the skill of his instrument makers. The urethroscope and cystoscope present themselves as later corollaries to Otis' primary work.

In the domain of gynaecological surgery, the work of Marion Sims at once comes to mind—his enthusiasm, his pertinacity, his

skill and ingenuity, as he step by step evolved his operation for the cure of vesico-vaginal fistula, discovered the best means of exposing the interior of the vagina to inspection, came to adopt silver wire as a material for sutures, and finally established that woman's hospital in New York City which, for a third of a century, has been a centre of original work and teaching in its special field. It is here that the wisdom of Emmett has discerned the true relation of lacerations of the cervix uteri to the etiology of a large proportion of woman's special ills, and has pointed out the path of relief, a contribution to woman's welfare the importance of which will certainly become more widely and unreservedly acknowledged with the lapse of time.

In the surgery of the abdomen, the introduction into successful practice of the rational treatment of penetrating gunshot wounds of the abdomen by systematic exploration of the cavity, and careful suturing of perforated intestines, will always be associated with the names of Bull and Parkes; the brilliant possibilities of intestinal anastomosis testify to the acumen and skill of Senn and Abbe and many others of our countrymen; but of the most far-reaching importance have been the contributions to knowledge of the pathology, symptomatology and treatment of inflammatory affections of the vermiform appendix, which has been a distinct contribution of American surgery, and in the evolution of which the surgeons of New York City have especially led, the names of Sands and McBurney, Weir and Bull, Stimson and Fowler, leading in the long list of the many who have contributed to its present state of perfection.

Not the least in importance among the examples of the fruit of the peculiar practical character of the American mind when turned to surgical problems, and by no means to be omitted from even so incomplete an enumeration as this, is the elaboration and perfection of the operation of intubation for the relief of laryngeal stenosis, an operation which admirably supplements tracheotomy, which is accepted in a much larger proportion of cases than the latter, and has already been the means, in the hands of American surgeons, of saving thousands of lives. To a New York surgeon, again,

O'Dwyer, is due the credit of the conception and entire elaboration of this operation.

It is with reluctance that I turn from further chronicling the achievements of American surgeons. With the increase of population, of the conditions that produce the demands for surgical acumen and skill, with the multiplication of hospitals, schools and publications, there has been a corresponding increase in every quarter of this land of active, alert, learned, skilled and enthusiastic practitioners of surgery. There is no surgical possibility that has been achieved by any surgeon anywhere that has not been paralleled by these men. There is no truth or suggestion of advance presented in any tongue or nation that is not seized with avidity by them and submitted to the test of experience by their practical and trained intellects. Their work is held in honor, not only by their professional colleagues, but also by an intelligent and discriminating public, and I regret that it is not possible for me at this time even to begin to enumerate the leaders of this army of surgical workers. I do not think that I am wrong in saying that among the American people surgery has always been held in greater esteem than internal medicine. The very freedom and clashing of theories and methods which have prevailed in medicine have tended to create a wide-spread distrust of the real merit of any of them. In surgery, however, there has been something tangible which could be seen and measured and judged by all. The merit which is gladly accorded in this land to any worker who can do anything well has been freely accorded to the successful surgeon. In a land where there is no hereditary leisure class, where all work has been honorable, the manual element of surgical work which has caused in other lands, until very recently, a certain social taint to attach to its practitioners, has in no way detracted from the social standing of the chirurgeon. While greater honor has been accorded him, greater responsibility has likewise been exacted from him. The frequency of malpractice suits in America has, doubtless, its origin in the prevailing sentiment that whoever offers himself for surgical responsibilities must be first fully equipped to discharge them,

or else be held accountable for the result of his shortcomings. It has always been recognized that "surgery forms a part of medicine," so that up to the present time there has never existed in America a class of surgical practitioners distinct from physicians. In those comparatively few instances in which, by a process of natural selection, practitioners have come to limit their work to external medicine and operative efforts, it has been as a development from the status of a general practitioner.

The demands of the present day as to the training of him who shall undertake any part of the healing art are multiplying greatly. The interests which are at stake are too great to allow any possible source of useful attainment to be neglected. The complexity, the abstruseness, the wide-reaching relations of many of the branches of knowledge, mastery of each of which is essential to the fully-equipped physician, are such as to require, as never before, well-trained minds to approach the study of medicine. If Frederick II was right 700 years ago, that no one should be admitted to the study of medicine who had not given himself at least three years to the study of "logic," certainly in these days a no less full course of training in those preliminary studies that tend to develop the reasoning and observing faculties, and to furnish the mind with a sufficient store of general knowledge is required from the medical neophyte who aspires for excellence in his profession. The ability to master the principles and to become skillful in the practice of the medicine of to-day—meaning by this the science and art of healing in its broadest sense, requires, in the highest degree, a trained mind, a trained eye, and a trained hand. Each decade has witnessed in this land a notable increase in the facilities for obtaining this training which has been furnished those who seek it. No men have been more ready to realize its importance, or to impress on the general public its necessity, than the great body of physicians of already mature age who themselves were denied it. As individuals and as organized societies they have always been the leaders in securing the advances in medical education which have been steadily going on, and are still in progress.

As a result, in the great universities of the country, courses, especially preparatory to the study of medicine, have been instituted; the number of students who bring with them to the benches of the medical school minds already well disciplined in the study of the humanities and the sciences has greatly increased; the courses of study in the medical schools have been multiplied, lengthened and systematized; laboratories have been equipped; dispensaries and hospitals have been furnished, and clinical training, to a very considerable degree, has been added to experimental and theoretical teaching. The friend to humanity who stops to consider the present condition of training in this country will be pleased, however, not so much with what has been done already, but with the ever-widening influences which it is evident must accrue in the future. Among the schools, a certain rivalry as to which shall furnish the best and most comprehensive training, among the people, a higher ideal of what their physician should be, and a better appreciation of the value of positive knowledge and trained skill, and among the practitioners of the healing art themselves, through the working of the law of the survival of the fittest, a steady elevation to higher types of training and attainment. The relation of these influences, now enumerated, to the creation of a high type of surgical character and achievement, is manifest. I turn to my dictionary and find that a surgeon is defined to be "one who performs manual operations on a patient." I appeal to philosophers and educators, and find that the highest type of mental development requires for its attainment not only the training of the intellect, but the exercise of the hand as well.

I survey the history of medicine, and find that only as the labor of the hand has become honorable and its skill has been brought to the unraveling of the mysteries of life and disease, has any progress been made. Knowledge in physiology, pathology, histology, bacteriology, anatomical research, are all the fruits of special manual efforts, and are cultivated only in *labor-atories*. I look over the revelations of disease as brought to light by modern research, and find an ever-increasing number that are most surely relieved by

methods that require manual interference. I inspect the methods of modern surgery, and find that its manual operations are no longer chiefly the setting of broken bones, the extraction of teeth, the opening of veins, the application of plasters and poultices, the introduction of stitches, the incision of abscesses, or even the amputation of limbs, but that they are examples of the most perfect technique of philosophical research, often intricate and delicate, invading the most hidden recesses of the body, sparing no organ, not even the heart or brain, but going everywhere, in their mission of mercy, where a distinct condition susceptible of possible relief has been demonstrated to be present; that they require for their suggestion and for their guidance the most intimate knowledge of the processes of life and the disturbances of disease, and the most thorough and exhaustive application of all the resources of diagnosis; and that in their execution they require cool judgment, strength of nerve, confidence in ability to overcome difficulties, and physical endurance to guide and control the skilled hand that performs the work.

The surgeon of the present day, therefore, if we are correct in the statement of the conditions that have attended his evolution, is necessarily a physician in the broadest sense. One of the peculiarities of the medical profession of this country has been the frequent use of the double title of "physician and surgeon" by the practitioners of the healing art. I have thought that its use was becoming less frequent than formerly. Perhaps, indeed, it is not necessary, since the one word, physician, "one who practices the art of healing," is broad enough to cover the whole field of medicine, whether therapeutical or operative. At all events the custom of coupling the two terms together has been significant of the attitude of the American people to surgery as being a part of medicine. It is in a line with local custom and traditional use that in concluding this sketch of the evolution of the American surgeon I present him under the words, a *physician and surgeon*. To no man is it given to possess in a perfect degree the highest qualities of his type, but to many of the men who are doing the surgical work of this land to-day, the common voice of an

enlightened public and their discriminating colleagues, can attribute with justice in an eminent degree the same qualities which were conspicuous in the leaders of surgical endeavor 400 years ago; we delight to honor them just in proportion as we see in them the erudition and regard for past experience that marked a Vigo, or the broad culture and philosophical attainments devoted to pathological research and clinical observation of a Benivieni, or the devotion to unraveling the mysteries of the human frame, and the fearlessness of operative attack, and the energy and character of a Carpi.

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